580.5
FB
v.20:5-7
v.22:6-10
1942
cop.2

SHOUT
SHARE
IT

B
22
.8
2

NEW SPECIES OF CROTON FROM GUATEMALA

BY

LEON CROIZAT

TECHNICAL ASSISTANT
ARNOLD ARBORETUM OF HARVARD UNIVERSITY

BOTANICAL SERIES
FIELD MUSEUM OF NATURAL HISTORY
VOLUME 22, NUMBER 8
JUNE 15, 1942

PUBLICATION 516

Natural History Library

NEW SPECIES OF CROTON FROM GUATEMALA

BY

LEON CROIZAT

TECHNICAL ASSISTANT
ARNOLD ARBORETUM OF HARVARD UNIVERSITY

BOTANICAL SERIES
FIELD MUSEUM OF NATURAL HISTORY
VOLUME 22, NUMBER 8
JUNE 15, 1942

PUBLICATION 516

PRINTED IN THE UNITED STATES OF AMERICA
BY FIELD MUSEUM PRESS

NEW SPECIES OF CROTON FROM GUATEMALA

LEON CROIZAT

The species of *Croton* here discussed or described as new were collected by Paul C. Standley during two Field Museum botanical expeditions to Guatemala in 1938–39 and 1940–41.

Croton botryocarpus, sp. nov.—Frutex gracilis ca. 2-metralis. Innovationibus inflorescentiisque sordide hispidulo-argillaceis vel hispido-tomentosis demum glabratis. Foliis ovato-ellipticis vel ovato-lanceolatis, breviter acuminatis vel cuspidatis, basi rotundatis, margine pustuloso-asperatis pilisque simplicibus auctis, subtus trichomatibus late stellatis lanulosis, supra novellis aeque ac adultis glabris, in sicco brunneis, 6–3 cm. longis, 2.5–1.5 cm. latis, venis primariis pinnatim ca. 8-jugis adscendentibus; petiolo lanuloso-stellato, 1–0.5 cm. longo, glandulis 2 subcylindricis, stipulis minimis vel subnullis. Inflorescentiis simplicibus, vulgo foliis verticillatim dispositis fultis, basi conferte ♀, ad 5–6 cm. longis. Floribus ♂ ignotis. Floribus ♀: perianthio (sub fructu) ca. 3–3.5 mm. lato, lobis 5 discretis, glabratis integerrimis linearibus, ad 1.5–2 mm. longis, petalis videntur nullis; capsula ellipsoidea, apice gibbose 3-cocca, ca. 6 mm. longa, 5–5.5 mm. lata, indumento detergibili matura glabrata, stylis 3 persistentibus ad 2–2.5 mm. longis, quove fere ad basim partito, columella fructu delapso ca. 4.5 mm. longa, apice incrassata, semine ellipsoideo 4 mm. longo, 3–3.5 mm. lato, apice truncato, caruncula minima, testa brunnea obscure pinnatim costulata, arillo tenuissimo subnitido.—Guatemala, Dept. Jalapa, vicinity of Jalapa, alt. about 1,360 meters, "damp thicket, slender shrub 2 meters tall," *Paul C. Standley* 77519 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.); Dept. Huehuetenango, northwest of Malacatancito at km. 8 of the highway from Huehuetenango, alt. about 1,950 meters, "dry open rocky slope; shrub 2 meters tall," *Standley* 82206, Jan. 1941.

Standley 82206 is a poor specimen, as I have it, but probably belongs here. This new species suggests *C. decalobus* Muell. Arg., but can easily be separated from it on account of the entire perianth lobes of the ♀ flower. *Croton lasiopetaloides* Croiz., described in this same paper, has a different kind of foliage and a somewhat different ♀ flower. The congested capsules, the lanulose-stellate

indumentum, the venation, and the peculiar margin of the blade are characteristic.

Croton callistanthus Croizat in Journ. Arnold Arb. 21: 84. 1940.—*Standley* 86784, collected along the old road between Finca Pirineos and Patzulín, alt. 1,200–1,400 meters, Dept. Quezaltenango, Guatemala, belongs to this species, and is in fruit. *Woodson, Allen & Seibert* 1006, collected at Bajo Mona, Prov. Chiriquí, Panama, also is in fruit, and despite the original erroneous determination, *C. gossypiifolius*, certainly belongs to *C. panamensis* Muell.-Arg.

The fruiting parts of these two plants differ as follows:

Croton callistanthus. Capsule small, the dehisced cocci delicate, not over 4.5 mm. long on the average, the yellowish epicarp finely granular and scarcely tomentose; columella at dehiscence about 3 mm. long; seed scaraboid, about 3 mm. long and broad (at the small caruncle), the testa irregularly granular-rugose.

Croton panamensis. Capsule fairly large for a species of this group, the dehisced cocci up to 6.5 mm. long, the epicarp manifestly verruculose and brown-orangish-tomentose; columella about 5.5 mm. long; seed (not as yet perfectly ripe but apparently measuring full size) scaraboid, about 5 mm. long and 3.5 mm. broad, the testa gross-costulate.

Croton callistanthus and *C. panamensis* are so similar in the characters of their vegetative parts and ♂ flowers that they can not be certainly identified as distinct unless ripe capsules and seeds are available. It is characteristic of *Croton*, especially in regions that have enjoyed the same climate from ages past, that large groups of species retain the same foliage and the same ♂ flowers, while speciating in the ♀ perianth and in the capsule, a fact emphasized elsewhere in this paper under *C. guatemalensis*. Thus, it proves practically impossible to dispose of critical forms unless very good collections are forthcoming, the risk attending the publication of new species on anything less than perfect material being very great. It is not possible as yet to decide whether *C. Steyermarkianus* Croiz. is nearer to *C. callistanthus* than to *C. panamensis*. On the other hand, *C. triumfettoides* Croiz. might be represented by *Austin Smith* A407, collected in the region of Zarcero, Costa Rica, a specimen on which appear the hispid pubescence and the slender stipitate glands of the type.

A substerile specimen, *Standley* 88211, Dept. Retalhuleu, region of Ajaxá, east of Santa Cruz Muluá, Guatemala, belongs apparently to *C. callistanthus*.

Croton guatemalensis Lotsy in Bot. Gaz. 20: 353, *pl. 25, 1–6.* 1895.—*Croton* is a genus which speciates by modification of the ♀ flower and fruit rather than in other manners. In Malaysia not less than in Central America the species of the same affinity are apt to retain the same foliage, and can not be recognized as distinct unless the fruit is seen. It is often found that plants that appear to be identical at first differ very materially in the size and indument of their capsule.

In Malaysia and Australasia a great many different forms center around *C. argyratus* Bl. and *C. Verreauxii* Baill., up to six or seven manifestly different forms having been identified for years under Blume's or Baillon's binomial. In the same manner, several are the forms in the vicinity of *C. niveus* Jacq. which range from Venezuela to Mexico and are confused today as one species. Jacquin's binomial, as now used, is practically meaningless.

Lotsy's descriptions of *C. guatemalensis* and *C. eluterioides* are such that only one species seems to be involved. The locality of collection is approximately the same if not the same (Dept. Santa Rosa, Guatemala), and little in the diagnoses seems to justify the belief that the species are two rather than one. Notwithstanding this, it is quite probable that *C. eluterioides* and *C. guatemalensis* are distinct. Lotsy states that the capsule of *C. guatemalensis* is unknown, and that the largest fruiting specimen of *C. eluterioides* which he saw had a capsule about 21 mm. long and 15 mm. wide. *Heyde & Lux* 3035, isotype of *C. guatemalensis*, and *Heyde & Lux* 3470, isotype of *C. eluterioides*, are available here. I find no ♀ flowers on the former, but nearly ripe capsules about 13 mm. long and about 10 mm. wide on the latter. The vegetative parts are practically identical in the two specimens cited.

A very important character which Lotsy does not mention is the armature of the capsule of *C. eluterioides*. The epicarp in this fruit is coarsely granular if not bluntly muricate, very rough to the touch and easily seen without a lens. So far, I have seen no other specimen that I can match with *Heyde & Lux* 3470, this indicating that *C. eluterioides* is apparently local or rare. I have found, on the contrary, numerous specimens which well agree with Lotsy's illustration of *C. guatemalensis* and have a much smaller capsule than the isotype of *C. eluterioides*. This capsule is roughened somewhat, but its processes are smaller and more loosely arranged than on the fruit of *C. eluterioides;* the size is also smaller, the ripe capsule

measuring on the specimens in question about 9 mm. in length and about 8 mm. in thickness, the seed being 7 mm. long and 5 mm. broad.

Thus, two different species seem to exist in the flora of the Department of Santa Rosa, one with a coarse and large capsule, the other with a sparingly granular and smaller fruit. The former is *C. eluterioides*, the latter I accept here as *C. guatemalensis*. These two species can not be told apart unless in fruit. Neither one is *C. niveus* Jacq., despite their having been so identified in several cases. The classic locality of *C. niveus* is "Carthagenae in sylvaticis" (Colombia), and I believe that this species is well represented by such specimens as *H. H. Smith* 356, Colombia, Santa Marta; and *Brother Elias* 327, Colombia, Barranquilla and vicinity. *Croton niveus* would seem to be an altogether smaller plant than *C. guatemalensis*, with lesser ♂ flowers, and is probably not found north of the eastern coast of Nicaragua. I have never seen a specimen of it in fruit, which is puzzling.

I determine as *C. guatemalensis* the following specimens, all from Guatemala, subject to a later revision with material in full fruit and larger collections: *Bequaert* 25, near Pacayal, in 1931; *Skutch* 894, Dept. Quezaltenango, in 1934; *Standley* 58086, Dept. Sacatepéquez, in 1938; *Standley* 59582, Dept. Guatemala, in 1938; *Standley* 62318, Dept. Chimaltenango, in 1939; *Standley* 86715, Dept. Quezaltenango, in 1941; *Standley* 88108, Dept. Retalhuleu, in 1941; *Standley* 88174, Dept. Retalhuleu, in 1941; *Standley* 88918, Dept. Sacatepéquez, in 1941; *Standley* 89546, Dept. Escuintla, in 1941. Since ripe or nearly ripe capsules are available on *Bequaert* 25, *Skutch* 894, *Standley* 62318, 86715, 88918, and 89546, my concept of *C. guatemalensis* rests in the main upon these collections.

This manuscript was in type when I received three specimens which very closely match *Heyde & Lux* 3470, the isotype of *C. eluterioides* Lotsy available here, namely: *Dodge & Goerger s.n.*, Costa Rica: Prov. Cartago, slope of Cerro Carpintera above La Unión de Tres Ríos, 1,350–1,500 meters, July 1936; *P. H. Allen* 661, Costa Rica: Vicinity of El Alto Station on road to Cartago, 1,550 meters, "tree 20 m., flowers white," December 1937–January 1938; *Davidson* 865, Panama: Prov. Chiriquí, Boquete, 1,200 meters, "large tree," July 1938. The Davidson collection bears a fruit which has dehisced cocci about 19 mm. long with a much roughened epicarp, and ellipsoid seeds, pointed at the chalazal end, strongly keeled on the back, very shallowly costulate, about 19 mm. long and 9 mm. broad. The caruncle is remarkably small and the aril brown-

ish, with darker mottlings nearly parallel with the conspicuous raphe. On *Allen* 661 is found a ♀ flower perfectly comparable with flowers of the same sex on *Standley* 86715. The styles of the Allen plant are manifestly longer and much more intricate (up to 5 mm. long) than those of the Standley collection (not over 2.5 mm. long); the pedicel is also shorter (1 cm. long) and somewhat stouter in the former than in the latter (ca. 2 cm. long). Barring these differences, the two flowers can not be told apart with certainty.

On the strength of the cited material I now believe that *C. eluterioides* is a more southern plant than *C. guatemalensis*, ranging mostly in Panama and Costa Rica and reaching in Guatemala its northern distributional limits. All the specimens listed have been distributed as *C. niveus* Jacq.

Croton jalapensis, sp. nov.—Frutex vel arbuscula ad 6 m. alta. Innovationibus inflorescentiisque pube stellato-hispidula citrina indutis, citius glabratis. Foliis pro more ovatis haud longe acuminatis, margine grosse dentato-serratis caeterum ambitu figuraque ludentibus, interdum elliptico-lanceolatis vel ovato-lanceolatis subcuspidatis, basi rotundatis vel rotundato-truncatis, 10–3 cm. longis, 6–2.5 cm. latis, firme chartaceis *Celtidis* spp. texturam in mentem vocantibus, novellis subtus griseo-tomentellis venis pallide lutescentibus, supra laxius tomentosis; adultis subtus valde glabratis, supra indumento longe radiato sparsissimo papillisque scabridis, in sicco olivaceis; venis primariis ad 5-jugis, primo jugo tertium laminae superum attingente valde ramoso, margine inter dentes glandulis stipitatis sub lente obviis ornato; petiolo luteo-tomentello 2–2.5 cm. longo, apice glandulis 2 anticis vel subanticis stipitatis ornato. Floribus ♂ ignotis. Floribus ♀ suppeditantibus valde mancis: pedicello brevissimo, 1.5 mm. longo vel breviore, eadem ratione ac ovario induto; ovario globuloso tricocco, ca. 2 mm. magno, indumento citrino conferto toto occultato, columella fructu delapso ca. 5 mm. longa, coccis maturis vix tomentellis ca. 9 mm. longis, duris; semine scaraboideo haud applanato, 5.5 mm. longo, ca. 5 mm. lato, apice more proprio producto-carinato, caruncula estipitata 1 mm. longa, 1.5 mm. lata, testa grosse at haud profunde rugoso-costata, arillo subnitido tenui, brunneo-maculato.—Guatemala, Dept. Jalapa, vicinity of Jalapa, alt. about 1,360 meters, "damp thicket; shrub 2–3 meters tall," *Paul C. Standley* 76414, Nov. 1940 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.); same locality and altitude, "damp thicket. Shrub or small tree to 6 meters, scarce," *Standley* 77378, Nov. 1940.

Strongly suggesting *C. quercetorum* Croiz., but differing from it in the seed, the capsule, the glands, the margin of the leaf, and the indument, the last especially on young leaves. Its affinities suggest both *C. corylifolius* Lam., of the West Indies, and *C. malvaviscifolius* Millsp., of Yucatan.

Croton jutiapensis, sp. nov.—Frutex 2-metralis. Innovationibus inflorescentiisque pube hispida pallide ochracea tomentosis, citius glabratis. Foliis ovato-lanceolatis vel lanceolatis, apice breviter cuspidatis, basi rotundato-cuneatis, 6–3 cm. longis, 3.5–1.5 cm. latis, supra brunneo-olivaceis, subtus brunneo-griseis, primum utrinque tomentosis, adultis supra quam subtus laxius indutis, margine manifeste duplicato-serratis vel dentato-serratis (dentibus ad 3 per 1 cm. marginis longitudine), inter crenas sub lente stipitato-glandulosis, venis primariis utrinque ca. 6-jugis, adscendentibus, bene anastomosatis, penninerviis; petiolo laete ochraceo-tomentoso, 0.5–1.5 cm. longo, glandulis stipitatis 2 lateralibus, stipulis setaceis integris ad 0.5 mm. longis. Flore ♀ unico viso: perianthii lobis anisomeris, more *Julocrotonis* spp., primo intuito insigni, ad 12 mm. longo, totidem lato, lobis ovarium valde excedentibus 5, majoribus spathulatis, ad 8 mm. longis, 2.5 mm. latis, integris, minoribus linearibus ad 5–6 mm. longis, vix 0.3 mm. latis, integris, perianthio ipso profunde partito, petalis (videtur) subnullis, glandulis obscuris; ovario albocitrino, hispido-tomentoso, ad 4 mm. lato, 3 mm. longo, stylis 3 filiformibus, hispidulis, quove fere ad basem in lacinias 2 ca. 4 mm. longas partito.—Guatemala, Dept. Jutiapa, vicinity of Jutiapa, alt. about 850 meters, "brushy rocky slope. Shrub 2 meters, common," *Standley* 74971, Oct.–Nov. 1940 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.).

Suggests a tomentose form of *C. Guildingii* Griseb. of Grenada in the West Indies, but is immediately characterized as distinct by the anisomerous lobes of its ♀ perianth. Resembles in habit and foliage *C. macrodontus* Muell. Arg., of Veracruz in Mexico, but has an altogether different ♀ flower.

Croton lasiopetaloides, sp. nov.—Frutex ad 1.5 m. altus. Innovationibus inflorescentiisque pube stellata brunnea vel cinerea indutis. Foliis ovatis vel ovato-lanceolatis breviter acuminatis, basi rotundatis vel levissime cordatis, primo utrinque tomentosis serius supra glabratis vel glabris, subtus semper cinereo-tomentellis, in sicco e lutescentibus (foliis emorientibus) olivaceo-brunneis, ad marginem quam ad laminam confertius pustulosis, subintegris, 7–5

cm. longis, 5.5–3.5 cm. latis, nervis primariis ad 5 late patentibus, supra impressis cum trabeis, primo jugo laminae dimidium attingente; petiolo ca. 2 cm. longo, glandulis 2 anticis parvis, stipulis glandulosis valde obscuris. Inflorescentiis subspicatis brevibus. Floribus ♂ ignotis. Floribus ♀ subsessilibus vel sessilibus, perianthio ca. 5 mm. lato, lobis 5 discretis lineari-acuminatis ca. 2 mm. longis, 0.75 mm. latis, basi quove glandula sessili sat magna obsito, integerrimis, dorso parcius tomentosis, ovario hispido-albicante haud tomentello ad 2.5 mm. longo, 3.5 mm. lato; stylis 3 ad 3.5 mm. longis, quove fere ad basem partito, columella fructu delapso ca. 6 mm. longa, apice manifeste triloba incrassata.—Guatemala, Dept. Huehuetenango, mountains west of Aguacatán on the road to Huehuetenango, alt. about 1,950 meters, "in oak forest, shrub 1.5 meters tall," *Paul C. Standley* 81219, Dec. 1940 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.).

In certain details of its flowers and, so far as seen, in the conspicuous leaf buds, *C. lasiopetaloides* suggests *C. botryocarpus* Croiz., but actually differs from it in the following characters: (1) The ovary is definitely hispid, not tomentellous or glabrate; (2) the perianth lobes are somewhat narrower, acuminate, and slightly tomentose, neither ligulate nor glabrous; (3) the foliage is not pinnatinerved and has a lesser number of primaries, the overdevelopment in length of the first pair causing the venation to appear as if 3-nerved; (4) the leaves at unfolding are tomentose on both faces and remain so a while; in *C. botryocarpus* the leaves, even at unfolding, are scarcely hairy above and become there almost immediately glabrous; (5) the columella after dehiscence is stouter and somewhat longer.

The specific name is derived from *Lasiopetalum* Sm., a genus of the Sterculiaceae, and in particular from *Lasiopetalum Schulzenii* Benth., an Australian species which *C. lasiopetaloides* appears to suggest in habit and in foliage. It is worth noticing here that the Sterculiaceae Lasiopetaleae are closely related with *Croton*, the evidence to be derived from floral morphology and general somatic characters indicating that both *Croton* and *Lasiopetalum* arose contemporaneously from a common malvoid ancestor in the same vicinity.

Croton limnocharis, sp. nov.—Frutex 2–4-metralis. Innovationibus inflorescentiisque pube stellata albida tomentellis, demum glabratis. Foliis optime ovato-cuspidatis vel ovato-lanceolatis, basi plus minusve obvie cordatis, 12–6 cm. longis, 7.5–3 cm. latis, in sicco supra olivaceis subtus pube tenui stellato-flocculosa detergibili

griseo-tomentellis, tenuiter chartaceis, margine vix repandulis vel subintegris, venis primariis utrinque ca. 6-jugis, primo jugo laminae tertium inferum vel (frequentius) dimidium attingente, ramoso; petiolo sat gracili, tomentello, ca. 2.5 cm. longo, glandulis caute inquirendis 2 patelliformibus sessilibus posticis, stipulis nullis vel subnullis. Floribus ♂ ignotis. Floribus ♀: perianthio delicato vix 3 mm. lato, pedicello ca. 2 mm. longo, lobis triangularibus vix 1–1.5 mm. longis, ovario ellipsoideo toto albicante tomentello ad 2 mm. longo, 1.5 mm. lato; stylis 3, ad 2–2.5 mm. longis, quove fere ad basem partito; capsula matura globulosa, ca. 7 mm. longa lataque, leviter trigona, pedicello fulta ca. 2 mm. longo, indumento facillime detergibili; semine scaraboideo applanato, ad chalazam rotundato-acutato, ad carunculam subtruncato-apiculato, 4.5 mm. longo, fere totidem lato, caruncula valde depressa ad 2 mm. lata, testa sublevi, arillo tenui subnitido lutescente.—Guatemala, Dept. Jutiapa, vicinity of Jutiapa, alt. about 850 meters, "damp thicket, shrub 2–4 meters," *Paul C. Standley* 75215, Oct.–Nov. 1940 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.).

This new species is closely allied with *C. pungens* Jacq. and *C. sarcopetalus* Muell. Arg., that is to say, with a group having pantropic American range. It may be easily confused at sight with *C. pseudoxalapensis* Croiz., from Honduras, which it resembles in habit, but it plainly differs from this species on account of the venation, which definitely tends to be 3-nerved, not pinnate. The ♀ flower and fruit, moreover, are pediceled and not sessile, and the seed is smoothish, not manifestly costate-rugose.

The extensive material of *C. xalapensis* H.B.K. and *C. pseudoxalapensis* Croiz. that I have seen in the past three years makes me doubt that it will be possible to maintain these two binomials as distinct in a final revision of the group. *Croton xalapensis* was originally reported from the vicinity of Veracruz in Mexico, and *C. pseudoxalapensis* is endemic to western Honduras. So far, my experience has been that the species of Euphorbiaceae with a wide range occur preferably on the eastern coast of Central America and Mexico, the western coast, on the contrary, being exceedingly rich in localized endemics. Under the circumstances, it may easily prove possible that the same species occurs in Honduras and in the state of Veracruz, Mexico.

Croton quercetorum, sp. nov.—Frutex vel arbuscula ad 8 m. alta. Innovationibus inflorescentiisque argillaceo-tomentosis sordidis vel brunnescentibus, indumento serius deciduo. Foliis ovato-

ellipticis vel triangulari-ovatis vel lanceolatis, acuminatis vel cuspidatis, basi rotundatis vel cuneatis, 14–7 cm. longis, 9.5–3.5 cm. latis, firme chartaceis, in sicco brunneo-olivaceis discoloribus, novellis utrinque tomentosis, citius glabrescentibus, adultis supra glabris, subtus trichomatibus stellatis longe radiatis parcissime indutis, margine irregulariter dentato-serratis, dentibus sub lente glandulosis, venis primariis utrinque ca. 5-jugis, primo jugo laminae ipsius dimidium attingente obscure ramoso; petiolo graciliore 2.5–4.5 cm. longo, tomentello, apice glandulis ca. 4 patelliformibus vulgo adaxialiter ornato, stipulis lentis, simplicibus vel 2–3-ramosis, gracilibus, ad 1.5 cm. longis, sat persistentibus. Inflorescentiis terminalibus simplicibus, habitu spicatis ad 20 cm. longis. Floribus ♂ ignotis. Floribus ♀ (sub fructu tantum notis): perianthio ad 7 mm. lato, pedicello vix 2 mm. longo, lobis integris, triangularibus, ca. 4 mm. longis, 2 mm. latis, dorso indumento rufescente grosso indutis; coccis delapsis ad 12 mm. longis, subligneis, glabratis; semine 10 mm. longo, 6.5 mm. lato, scaraboideo, caruncula vix 1.25 mm. magna, applanata, testa utrinque pinnatim costato-rugosa, arillo subnitido tenui lutescente.—Guatemala, Dept. Jalapa, mountains about Chahuite, northwest of Jalapa, alt. 1,650 meters, "damp oak forest; shrub or tree to 8 meters; abundant," *Paul C. Standley* 77460, Nov. 1940 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.).

A species in the general affinity of *C. corylifolius* Lam., of the West Indies, strongly characterized by its stipules, indument, and capsule. It resembles certain states of *C. jalapensis* Croiz., but can easily be distinguished from it on account of its larger capsule and the seed, which is grossly rugose-costate on both its faces.

UNIVERSITY OF ILLINOIS-URBANA
3 0112 041653723